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Alternatives to Archaeological Data Recovery

Cover Page Footnote

Many of the thoughts expressed here had their origins in numerous conversations over many years with Bert Salwen. Bert was always looking for new ways of doing things and he was always willing to experiment. He also took the concept of archaeological preservation seriously. As one of the earliest practitioners of "contract" archaeology, Bert had a special advantage. Having been trained as an engineer he was able to talk to engineers in their own language and on their own terms. He taught me by example that the engineers of a project often could have as much to contribute to assessing a project's impacts to archaeology as could an archaeologist. He was always asking engineers why something could not be moved, or be designed differently, to avoid an archaeological site often he was able to make specific suggestions on just how to do it. I remember one instance where an engineer informed Bert that the changes necessary to avoid an archaeological site would be too expensive. Bert explained very calmly that that was too bad since it meant that there wasn't enough money to build the project. The engineer found the money. I can say without reservation that Bert Salwen was also the best teacher I ever had. He enjoyed teaching and emphasized the importance of educating the public about the role and importance of archaeology. In the latter phase of his career he devoted large amounts of time to organizing and teaching courses for non-archaeologists in government agencies with cultural resource management responsibilities. This paper is one of my own attempts to carry on that tradition. An earlier version was presented to the Edison Electric Institute Cultural Resource Management Task Force, August 25, 1991, Valley Forge, Pennsylvania.

ALTERNATIVES TO ARCHAEOLOGICAL DATA RECOVERY

Joel I. Klein

Archaeological data recovery ("salvage" excavation) is currently the principal method of mitigating project-related impacts to archaeological sites. The expense, uncertainties, and complicated logistics associated with archaeological data recovery are causing more and more cultural resource managers to seek alternative approaches to mitigation. This paper examines some of these alternatives in terms of their applicability to particular kinds of utility projects, the degree to which they satisfy the spirit as well as the letter of historic preservation laws and regulations, and the nature of objections that have been raised regarding their implementation. Among the alternative approaches considered will be avoidance as mitigation, site burial, site banking, and site stabilization.

La récupération de données archéologiques (fouille "de sauvetage") est actuellement la principale méthode utilisée pour atténuer l'impact de travaux sur les sites archéologiques. Les dépenses, les incertitudes et la logistique compliquée connexes à la récupération de données archéologiques (fouille "de sauvetage") portent de plus en plus les gestionnaires de ressources culturelles à chercher d'autres méthodes. L'article en examine quelques-unes sous le rapport de leur applicabilité à certains genres particuliers de travaux publics, du degré auquel elles répondent à l'esprit aussi bien qu'à la lettre de la législation et de la réglementation relatives à la conservation historique et de la nature des objections auxquelles se heurte leur mise en application. Parmi les autres approches envisagées figureront l'inexécution de travaux et l'enfouissement, la mise en réserve et la stabilisation des sites.

Implementing regulations for Section 106 of the National Historic Preservation Act (36 CFR 800) use the terms "mitigate" and "mitigation" very sparingly. They do state that whenever it is determined that a property eligible for the National Register will be adversely affected by a proposed project, the agency with jurisdiction over that project shall "seek ways to avoid or reduce the effects." In requesting comments on their undertakings from the Advisory Council on Historic Preservation, federal agencies are also required to provide descriptions and evaluations of proposed mitigation

measures as well as those measures considered but not chosen.

The most frequently utilized method of mitigating the effects of a construction project on archaeological resources is what, for the last decade or so, has been referred to as data recovery. In earlier days it was referred to by the much more graphic phrase "salvage excavation." In Europe it is referred to as "rescue archaeology." (A distinction is sometimes made between salvage and data recovery. The former is now associated with work done without proper funding and where the archaeology is done at the sufferance of

the project owners. The latter is sometimes confined to legally mandated archaeology that must be completed before construction is permitted to proceed.) Whatever term is used, however, it involves removing archaeological remains from an area about to be physically disturbed by pending construction, while at the same time recording information about the context of those remains. The intent is to save from destruction important scientific and anthropological information before it is destroyed.

Leaving for a moment a discussion of why data recovery is so frequently employed, I would like to consider alternatives to excavation. Several of these have received considerable attention among archaeologists in recent years. Among the currently available alternatives are avoidance, burial, banking, and stabilization.

Avoidance as Mitigation

If a transmission line is rerouted, or a power plant construction laydown area is moved to avoid affecting archaeological sites, the project's effect on those sites is eliminated. Does this constitute mitigation in terms of the ACHP's regulations? The answer is not simple. One must first ask, at what step in the project design process did this project modification occur? If the utility trying to license the project utilizes information provided by an archaeological consultant to design the project so that it avoids affecting the site, the project, as presented to the licensing agency, will not be affecting that historical property and there is no need for mitigation in terms of 36 CFR 800. This would seem to be the ideal way to avoid an archaeological "problem." Even if knowledge of the

presence of the archaeological site is obtained after preliminary design is completed—a much more likely scenario—the expense of redesign is often considerably less than the cost of a potential data recovery project. Potential schedule problems necessitated by the need to perform the data recovery are also avoided.

Suppose, however, that redesign can eliminate impacts to only some of the archaeological sites. The universe of archaeological sites within the project's area of effect, *as that project is presented to the licensing or permitting agency*, now consists only of those sites that cannot be avoided. It may thus become difficult, or impossible, for the utility to "take credit" for avoiding or "mitigating" impacts to the other sites. If, however, the original project was submitted to the licensing agency and then modified to incorporate the redesign that avoided the sites, the redesign would clearly be considered a mitigative measure.

The importance of documenting avoidance measures that have been taken cannot be overestimated. The same applies to documenting why avoidance is not feasible in particular instances. A case in point is a utility wanting to undertake a natural gas pipeline project under the authority of a blanket certificate pursuant to Subpart F of Part 157 of the Federal Energy Regulatory Commission's regulations. FERC regulations state that if either the certificate holder or the SHPO finds that the project may affect a property on or eligible for the National Register of Historic Places "then the project shall not be authorized under the blanket certificate unless such properties can be avoided by relocation of the project" [Appendix II to Subpart F, 18 CFR 157.206(d)(3)(ii)]. Failure to document avoidance could jeopardize

the project's ability to qualify for a blanket certificate.

Designing a project to avoid disturbing archaeological sites would seem, at first glance, to be desirable. Why then do some archaeologists resist the concept of avoidance as a mitigation measure? The most common response given by archaeologists is that while a project may avoid the archaeological site, there is no guarantee about what might happen to it tomorrow. If the project is a transmission line right-of-way (ROW) utilizing an easement, the property owner might decide to strip the topsoil from the site (which is now outside the ROW). Another commonly heard reason for rejecting avoidance is that the new ROW running near the archaeological site will improve access to the area, making it easier to vandalize the site.

There is some merit to each of these arguments. What is usually lacking, however, when they are advanced in regard to a particular situation, is an evaluation of the likelihood that avoidance of the archaeological site in question will either lead to its destruction, or increase the chance of destruction, or only delay its eventual destruction. For example, construction of rights-of-way in arid regions where no forest clearing is necessary can hardly be said to be improving access for vandals. Project redesign to avoid archaeological sites located on federal property cannot be considered to be merely postponing site destruction. Virtually any future action on such land would still be subject to the requirements of Section 106 of NHPA. The worst that can be said is that data recovery is being postponed until some future time when it is necessitated by another project. Finally, one must consider the likelihood that future

development not subject to NHPA will result in the destruction of the site. For example, rerouting an EPA-funded sewer line to avoid an archaeological site should not be considered an appropriate mitigative measure if the presence of the sewer will spur the construction of homes or industrial facilities not subject to NHPA.

Before departing from the subject of avoidance I would like to discuss one particular case study that I believe illustrates some of the difficulties with applying avoidance as mitigation. The archaeological survey of a proposed transmission line ROW associated with a pumped storage project now pending before FERC identified a prehistoric rockshelter along a comparatively remote and isolated portion of the ROW. The project license applicant's archaeological consultants proposed data recovery as mitigation. Investigation of project details, however, indicated that the site would not be disturbed by construction (no ROW clearing would be necessary at the site location, no towers were to be constructed within several hundred yards, and the area would not be disturbed by any equipment storage or other project-associated activities). As a result, FERC staff recommended that the site be permanently fenced to deal with increased potential for vandalism associated with the improved access created by the new right-of-way.

Subsequently, the applicant, for a variety of reasons, modified the project filing with FERC to move the transmission line several hundred feet away from the rockshelter. The site is now being avoided. The controversial nature of the project has been such that the existence of the rockshelter is now widely known in the area. The theoretical issue of increased potential for vandalism is now a very real concern. With the rockshelter now located out-

side the project boundaries, does FERC have any obligation to deal with it? Is it within the project's area of effect? If the answer is no to either of these questions, how can the applicant be required to undertake any kind of mitigation on property that he does not own or control?

In summary, to quote a recent Army Corps of Engineers publication, "there are problems with accepting site avoidance as a simple panacea" (Nickens 1991: 6). It should not be applied across the board. At the same time, however, there will be instances when it is an appropriate mitigative measure. Its primary advantage from the archaeologist's viewpoint is that, when used appropriately, it is consistent with the preservation ethic. That ethic, put most simply, holds that site preservation is preferable to the controlled destruction of data recovery. From the project proponent's point of view it is an advantageous approach because it can be the most cost-effective of all other potential forms of mitigation.

Site Banking

The concept of site banking is an old and simple one. It traces its roots back to the beginnings of the historic preservation movement in the 19th century. Basically it treats archaeological sites as currency that can be saved—banked—by arranging for their preservation. National parks and monuments containing archaeological sites within their boundaries are examples of site banks. More recently the concept has been expanded to include the acquisition by private agencies, such as the Nature Conservancy and the Archaeological Conservancy, of archaeological sites for the specific purpose of assuring

the long-term preservation of those sites. Preservation easements, where a property owner transfers rights in historical properties to non-profit organizations, are also a form of site bank. What these forms of banks have in common is that withdrawals are difficult or impossible to make.

The concept of site banking as archaeological mitigation, however, is a relatively new concept that is now receiving considerable attention in cultural resource management circles. In fact, a task force including members of federal and state agencies and the Society for American Archaeology was formed recently to look into the concept.

This type of banking is often compared to the concept of site banking as used in wetland mitigation. As applied to wetlands, the idea is to provide compensation in advance for wetlands habitat losses caused by future development projects. Wetlands are treated as currency that developers can deposit *and withdraw*. The bank sponsor—the developer—works with a number of federal and state agencies with jurisdiction over wetlands (e.g., the EPA, the Army Corps of Engineers, the Fish and Wildlife Service, and the National Marine Fisheries Service) to develop a plan that may be formalized as a Memorandum of Agreement. The MOA defines "who will use the bank, the objectives for restoration or creation of wetlands, the geographical boundary of the area that may be considered for actions against the bank, and who will manage the bank and maintain the records" (Howorth 1991: 141).

The compensation for damaged or destroyed wetlands is provided by restoring, creating, or enhancing an off-site wetland environment. The amount of off-site wetland restored, created, or enhanced, in relation to on-site wetland

destroyed or damaged, can vary from a straight acre-for-acre exchange (referred to as one-to-one replacement) to an amount determined through a complex methodology developed by FWS (the Habitat Evaluation Procedure—HEP), which attempts to measure the “functional value” of the land in question. Once this determination is made the number of credits quantified are banked until a future mitigation need arises.

Wetlands banking is attractive to developers because it can eliminate the need for expensive project modifications to avoid wetlands, because mitigation can be planned in advance, and the mitigation itself, since it is off-site, will not interfere with construction. Archaeological site banking is attractive for the same reasons. Two variants of archaeological site banking have been put forth. The first is a direct counterpart to the wetland model. Developers purchase archaeological sites or preservation easements to sites and donate them to institutions such as the Archaeological Conservancy or historical societies. In exchange, the developers are permitted to construct their projects without having to carry out on-site mitigation such as data recovery.

Problems with this type of site banking are many. First, how does one determine how many sites, of which types, must be put in the bank in exchange for permission to destroy another? Second, archaeological sites are a finite commodity. No new Archaic-period campsites are being created. The banking concept results in a net loss of archaeological properties. Finally, archaeological sites are not created equal. The concept of banking is based on the notion that it is possible to identify sites that are equal to one another—that information contained in

a site that will be destroyed is not really being lost because equivalent data exist in a site that has been banked. The principal problem here is that what archaeologists perceive as duplicative data sets is dependent upon the state of the art and is constantly changing. As analytical skills increase, our ability to distinguish differences among archaeological sites also increases. What are thought today to be similar sites may be recognized tomorrow as being quite different.

The second type of archaeological site banking relates to an approach to data recovery. It was developed by archaeological consultants to a natural gas pipeline company who were faced with a problem. The amount of time afforded to them in a pipeline construction schedule was insufficient for all necessary in-ROW data recovery to be completed. The archaeologists’ solution was to divide all of the sites within the ROW into two groups—those located completely within the ROW, and those located only partially within the ROW. Traditional data recovery was performed at the first group of sites. At the second group of sites, data recovery would be performed *after construction* at the portions of the sites located outside the ROW. As with the other variant of site banking, the bottom line is a greater net loss of resources.

The problems with this approach include, first, the fact that archaeological sites are not homogeneous entities. In most instances the amount of archaeological testing carried out in connection with environmental assessments is not adequate to distinguish subtleties of intra-site variability. Second, because archaeological sites are non-renewable resources, the conservation ethic applies. Any unnecessary excavation,

even when conducted in a scientific and responsible manner, is almost always less desirable than preservation in place. The destruction of the portion of the site within the ROW, plus the controlled destruction of data recovery outside the ROW, constitutes a greater loss than if data recovery was confined to only the ROW. It also means that the portion of the site outside the ROW will not be available for study in the future when research questions have changed and excavation and analytical methods have improved.

The fact that archaeological site banking in the forms I have described, is a long way from being accepted is witnessed by the following. A major natural gas pipeline company proposed creation of a site bank to mitigate the destruction of more than 70 sites that were eligible for the National Register along their pipelines in Alabama. This did not much impress the Federal Energy Regulatory Commission. Their proposed levy of a 37 million dollar civil penalty against the company for constructing without properly consulting with FERC and the Alabama State Historic Preservation Officer about the treatment of archaeological properties reflects the current attitude of at least one agency to the concept of banking as mitigation. (The company subsequently settled the case by agreeing to pay 27 million dollars, including 12 million dollars to the Alabama Historical Commission for use in carrying out a variety of archaeological programs in the areas affected by the pipeline.)

I want to end my discussion of site banking by saying that while I am opposed to site banking in the forms I have described above, I am not totally opposed to the concept. It does have a place in mitigation, but only as an adjunct to other forms of archaeological

mitigation. Since most data recovery projects involve excavation of only a small percentage of the portion of the archaeological site being destroyed (typically in the range of 5%), there is always a large amount of information about the site that is lost. This loss could be partially alleviated by requiring developers to put into a site bank the portions of the archaeological sites not impacted by their construction. No withdrawals from these banks would be permitted, except under special predesignated circumstances.

Site Burial

The concept of site burial, or preservation in place by burial, has been around for some time. The basic concept is that one covers an archaeological site with a protective buffer, usually earth, and proceeds to construct on top of the site. Most instances of the application of intentional burial have not been associated with NHPA Section 106 compliance. Rather, they involve instances where burial was used to protect a site from ongoing vandalism or natural erosion.

is the concept of construction on top of the archaeological resource. This approach has been proffered most frequently by State Departments of Transportation. One must recognize that it is considerably easier to realign a transmission line ROW to avoid an archaeological site, than it is to realign an interstate highway. Clearly this approach to mitigation has its appeal to DOTs that argue that they are preserving these buried archaeological sites for the future.

Objections to this form of mitigation fall into two groups. First, it is argued that construction of a highway or a power plant on top of a

site, even when that site is not being directly disturbed, is still an adverse impact—adverse because the accessibility of that site for future study has been eliminated. Second, the actual effects of burial are only poorly understood.

In regard to the first objection I would like to say that I am more than a little uncomfortable with the idea that building a highway on top of an archaeological site is a form of preservation in place. I think that some types of construction, however, parking lots for example, can be undertaken in ways that will protect the archaeological sites below them. Archaeologists have in recent years become fairly adept at digging holes through paved surfaces to carry out surveys. There is no reason to think that the presence of a few inches of macadam would render the site permanently inaccessible to future generations of researchers. Obviously the parking lot must be constructed in a manner that does not disturb the underlying archaeological deposits.

In regard to the second group of objections, it is true that the effects of burial are still not well understood. This situation is changing rapidly, however. Deliberate burial as mitigation was employed as early as 1976 by the Bureau of Reclamation at a site in California (Jensen 1976). In 1983 the California Department of Transportation issued a report on the results of a study of the effects of high embankment construction on archaeological materials (Garfinkel and Lister 1983). Since then there have been approximately a score of studies dealing with the effects of physical and chemical changes in archaeological sites as a result of burial. In 1989, and again in 1991, the National Park Service's Archeological Assistance Program issued a technical brief on intentional burial that discussed the

current state of the art. I think it is fair to say that as more becomes known about the effects of intentional burial, it will become a more frequently employed alternative to data recovery.

Another variant of site burial has also begun to receive attention. This is the use of soil or other protective barriers such as matting and geotextiles to limit the extent of disturbance to archaeological sites. The most common situation where this has been considered is pipeline construction. While traditional archaeological data recovery is carried out within the limits of the pipe trench, portions of the archaeological sites adjacent to the trench are covered with protective barriers so that trenching equipment can operate, and backdirt can be piled, without disturbing the underlying archaeological deposits. Temporary site protection may also be an alternative to data recovery when archaeological sites are located within temporary work spaces like laydown areas and pipe storage yards, when those areas cannot be readily moved, and when fencing is not viable. Compression damage is obviously one of the major concerns in this situation. Several studies of the effects of compaction, and of the effectiveness of various protective measures, have been completed. Others are underway.

Site Stabilization

The last of the alternatives to data recovery that I would like to discuss is site stabilization. Like site burial, which can in some instances be considered a form of stabilization, stabilization has a long history in archaeological resource management. Like site burial, it traces its origins to the need to protect sites from natural processes such

as erosion. Within the last decade it has become the subject of increasing study since it offers a way of halting the erosion of archaeological sites located in coastal areas and, more importantly for this group, along reservoir shore lines.

The Corps of Engineers Waterways Experiment Station, the National Park Service, and the Tennessee Valley Authority have devoted increasing efforts to identifying what forms of traditional erosion control work most effectively at different kinds of archaeological sites in different environments. A National Clearinghouse for Archaeological Site Stabilization has been established at the University of Mississippi. Numerous long-term experiments on the effectiveness of filter fabrics, geoweb, riprap, and revegetation are ongoing and preliminary results are beginning to appear in technical publications.

Stabilization is a particularly appropriate alternative to data recovery where archaeological sites located along reservoir shorelines are concerned. Potentially the most common application in relation to NHPA Section 106 compliance is FERC hydroelectric relicensing projects. Most of these projects were constructed before the provisions of NHPA came into force. As part of relicensing requirements, both known and previously unrecorded archaeological sites located within reservoir draw-down areas (the area between high and low water levels) are being identified, and mitigation of the effects of project operation is being included as a licensing condition.

Where it can be effectively utilized, site stabilization has an advantage over data recovery in that it is nondestructive, and therefore consistent with the preservation ethic, and can be considerably less expensive to employ

than data recovery. Even where it is only partially effective, and results only in the retarding of the rate of site erosion, its application may be considered as a temporary measure until a data-recovery program can be developed and implemented.

Conclusions and Summary

At the start of this essay I stated that I would return to the topic of why data recovery is the most frequently suggested and employed form of mitigation for archaeological sites. I think there are several reasons. First, the recommendations for mitigation are generally made by archaeologists. Archaeologists like to dig. If they don't dig, they can't obtain the data they need to carry out the research that they need to publish to obtain peer recognition, and if they are academically based, to advance professionally. For this reason, in spite of the preservation ethic, "dig it up" is often the first reaction of many archaeologists. This reaction is also fostered, somewhat, by the Advisory Council on Historic Preservation, whose regulations consider data recovery a "non-adverse effect."

Second, data recovery, unlike the other forms of mitigation discussed here, is labor intensive. What this means is that many consulting archaeologists are under considerable pressure to keep small armies of field technicians employed. These individuals can generate a considerable number of highly profitable work hours for their employers.

Third, there is a real lack of knowledge on the part of many archaeologists of the available alternatives to data recovery, which ones are appropriate in a given situation, and which are likely to be effective. Fortu-

nately, this last reason is becoming less prevalent.

In summary, cost-effective alternatives to data recovery as archaeological mitigation are available. Their applicability is becoming more widespread as more is known about their effectiveness and how to make them work better. The utility industry in particular should be able to recognize considerable savings in both dollars and project licensing and construction time by judiciously proposing the use of alternatives to data recovery in appropriate situations.

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